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09/747,599	12/22/2000	Glynn Russell Ashdown	P98,1245	4501

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EXAMINER

NGUYEN, DILINH P

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/747,599

Applicant(s)

ASHDOWN, GLYNN RUSSELL

Examiner

DiLinh Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 13-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 and 15-17 is/are allowed.
- 6) ☒ Claim(s) 1-8, 13-14 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 112

Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase: "...said heat dissipating element being spaced from the heat generating component in a direction perpendicular to a major surface of said heat generating component..." is not understood.

The drawings show the circuit board is in a first plane, the heat dissipating element is in a second plane and the heat generating element is in a third plane; wherein the first, second and third planes are substantially parallel to one another.

The drawings fail to show the heat dissipating element being spaced from the heat generating component in a direction perpendicular to a major surface of said heat generating component.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8, 13 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikushima (U.S. Pat. 5,912,592) in view of Mori et al. (U.S. Pat. 5,659,199).

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- Regarding claim 1, Kikushima discloses a semiconductor device (figs. 1-2) comprising:

a substrate (column 6, line 51) having a mounting pad provided with an adhesive material in a mounting region (column 5, lines 66 et seq.);

a mounting plate 71 formed of thermally conductive material (column 6, lines 40-45), wherein the mounting plate having a first major surface being positioned on the mounting pad of the substrate;

a radiating lead 11 (heat dissipation element) thermally connected to the mounting plate and being spaced from the substrate (fig. 2, column 6, lines 35 et seq.), the heat dissipating element being disposed in a position to receive air flow on both sides; and

an IC chip 60 (fig. 2, lumn 5, lines 66) mounted on the mounting plate 71 at a second major surface opposite the first major surface, the heat dissipating element being spaced from the heat generating component to permit air flow between the heat dissipating element and the heat generating component.

- Regarding claim 13, Kikushima discloses a semiconductor device (figs. 1-2) comprising:

a mounting plate 71 of a generally planer configuration;

an extension member extending generally perpendicular to the mounting plate;

a radiating lead 11 (heat dissipation element) connected to the extension

member, the heat dissipation element and a extension member and the mounting

plate being thermally conductive and the heat dissipating element being spaced

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from the heat generating component; wherein the extension member in a direction perpendicular to a major surface of the heat generating component.

- Regarding claim 18, Kikushima discloses a semiconductor device (figs. 1-2) comprising:

a substrate (column 6, line 51) having a mounting pad provided with an adhesive material in a mounting region (column 5, lines 66 et seq.);

a mounting plate 71 formed of thermally conductive material (column 6, lines 40-45), wherein the mounting plate having a first major surface being positioned on the mounting pad of the substrate;

a radiating lead 11 (heat dissipation element) thermally connected to the mounting plate and being spaced from the substrate (fig. 2, column 6, line 35 et seq.), the heat dissipation element being disposed with an air gap below between the heat dissipating element and an air gap above the heat dissipating element; and a heat generating component IC chip 60 (fig. 2, column 5, line 66) mounted on the mounting plate 71 at a second major surface opposite the first major surface.

Kikushima fails to disclose a mounting plate comprising a plurality of adhesive flow openings therethrough.

Mori et al. disclose mounting plate 11 (figs. 1-2, column 4, lines 15-25 and 52-58) comprising a plurality of adhesive flow openings therethrough to better secure the chip to the mounting plate. Therefore, it would have been obvious to one having ordinary

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skill in the art at the time the invention was made to modify the device of Kikushima to better secure the chip to the mounting plate, as shown by Mori et al.

- Regarding claims 2-3, Mori et al. disclose a paste material 6 or solder (fig. 5, column 1, lines 42-43). It would have been obvious that the adhesive material of Mori et al. is thermal adhesive.
- Regarding claim 4, Kikushima discloses the J- shape radiating lead 11 (fig. 1, column 7, lines 9-10) comprising an extension generally perpendicular to the mounting plate; and a portion generally parallel to the mounting plate and spaced therefrom.
- Regarding claim 5, Kikushima discloses the portion overlies the mounting plate (fig. 1)
- Regarding claim 6, Kikushima discloses the portion includes lateral extension (fig. 1).
- Regarding claims 7-8, Kikushima discloses the mounting plate and the extension and the portion form a U shape (fig. 1). It would have been an obvious to one having ordinary skill in the art at the time the invention was made to form the mounting plate and the extension and the portion form a Z shape.
- Regarding claim 19, Kikushima discloses the substrate is in a first plane, the heat dissipating element is in a second plane and the heat generating element is in a third plane, the first and second planes are spaced apart and the third plane having the heat generating element is disposed between the first and second planes.

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- Regarding claim 20, Kikushima discloses the first , second and third planes are substantially parallel to one another.

3. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kikushima (U.S. Pat. 5,912,592) in view of Mori et al. (U.S. Pat. 5,659,199) and further in view of Rife et al. (U.S. Pat. 5,825,622).

Kikushima and Mori et al. disclose the claimed invention except for a heat dissipating fin.

Rife et al. disclose a heat dissipating fin 30 (cover fig., column 4, line 10) to improve the heat dissipating for the semiconductor package. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Kikushima and Mori et al. to improve the heat dissipating for the semiconductor package.

Claims Allowed

Claims 9 and 15 -17 are allowed (see the examiner's statement of reasons for allowance in the previous office action).

Response to Arguments

Applicant's arguments filed 3/17/03 have been fully considered but they are not persuasive.

The applicant argues that Kikushima fails to show a mounting plate under the heat generating molded component and the heat dissipating element has a portion spaced from both from the circuit board and the heat generating component so that air

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can effectively cool the heat dissipating element, and thereby cool the heat generating component.

Kikushima discloses a mounting plate 71 under the heat generating component IC chip 60 (fig. 2, column 6, lines 40-45) and the heat dissipating element has a portion spaced from both the substrate and the heat generating components and the radiating lead 11 or 72 bents into a J-shape (column 6, lines 58-65) so that air can effectively cool the heat dissipating element, and thereby cool the heat generating component.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the heat dissipating element spaced from the heat generating element in a direction perpendicular from the mounting plate) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument that it is not obvious to combine references, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

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Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (703) 305-6983. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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DLN

May 15, 2003

Wael Sherry
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